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Optical Diagnostics of Corona Discharge by Laser Interferometry

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Abstract : In this work, we propose to determine the density of neutral particles of an electric discharge peak - Plan types performed in air at atmospheric pressure by applying a technique based on laser interferometry. The experimental methods used so far as the shadowgraph or stereoscopy, give rather qualitative results with regard to the determination of the neutral density. The neutral rotational temperature has been subject of several studies but direct measurements of kinetic temperature are rare. The aim of our work is to determine quantitatively and experimentally depopulation with a Mach-Zehnder type interferometer. This purely optical appearance of the discharge is important when looking to know the refractive index of any gas for any physicochemical applications.

Keywords : laser source, Mach-Zehnder interferometer, refractive index, corona discharge
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